BIOMETRICS

VOLUME 11: 1955

Numbers 1–4

Published Quarterly by

THE BIOMETRIC SOCIETY

NEW HAVEN, CONN.

1955

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

BIOMETRICS published Quarterly at New Haven, Connecticut for January-December, 1955

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Name	*Address*
Publisher, The Biometric Society	52 Hillhouse Ave., New Haven, Conn.
Editor, Prof. Gertrude Cox	Box 5457, College Station, Raleigh, North Carolina
Managing Editor, Mrs. Sarah P. Carroll	Box 5457, College Station, Raleigh, North Carolina
Business Manager, None.	

2. The owner is: (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Name	*Address*
The Biometric Society	52 Hillhouse Ave., New Haven, Conn.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

Name	*Address*
None	

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.).....

Sarah P. Carroll, Managing Editor

Sworn to and subscribed before me this 27 day of September 1955.

[SEAL]

Katherine C. McKimmon
(My commission expires April 18, 1957)

BIOMETRICS

Contents of Volume XI

ABSTRACTS	114, 240, 508, 535
NOTES	118, 519
QUERIES	111, 237, 395, 504
THE BIOMETRIC SOCIETY	115, 252, 556

ARMITAGE, P., A. W. DOWNIE and K. McCARTHY, *Abstract* #319 248

ARMITAGE, P., Tests for Linear Trends in Proportions and Frequencies 375

BAILY, J. L., Jr., *Abstract* #327 510

BAITSCH, H., *Abstract* #318 247

BARRACLOUGH, C. G., Statistical Analysis of Multiple Slope Ratio Assays 186

BAUER, R. K., *Abstract* #309 242

BINET, F. E. (*See* RICHARDSON, Mrs. G. L.)

BLACKITH, R. E., *Abstract* #323 250

BLISS, C. I., An Introductory Course in Biometry for Graduate Students In Biology 213

BLISS, C. I., *Abstract* #356 547

BOX, G. E. P., and P. V. YOULE, The Exploration and Exploitation of Response Surfaces: An Example of the Link Between the Fitted Surface and the Basic Mechanism of the System 287

BRANDT, A. E. and G. H. FLETCHER, *Abstract* #361 552

BRIEGER, F. G., *Abstract* #345 536

BRIER, O. G., M. SIQUEIRA and P. M. FREIRE, *Abstract* #358 549

CANSADO, E., *Abstract* #355 546

CHAPMAN, D. G. and RONALD PYKE, *Abstract* #326 508

CHARBONNIER, A., B. CYFFERS, D. SCHWARTZ and A. VESSEREAU, *Abstract* #362 553

CLARINGBOLD, P. J., Use of the Simplex Design in the Study of Joint Action of Related Hormones 174

CLARINGBOLD, P. J., *Abstract* #341 518

COCHRAN, W. G., Brief of Presidential Address 528

CONAGIN, ARMANDO and C. G. FRAGA, *Abstract* #347 539

COX, D. R., *Abstract* #320 248

COX, GERTRUDE M., *Abstract* #349 541

CYFFERS, B., (*See* CHARBONNIER, A.)

DEMPSTER, E. R., *Abstract* #344 535

DITCHBURNE, NELL, A Method of Analysis for a Double Classification Arranged in a Triangular Table 453

DOUGLAS, J. B., Fitting the Neyman Type A (Two Parameter) Contagious Distribution 149

DOWNIE, A. W. (*See* ARMITAGE, P.)

DRUCKREY, H., *Abstract* #310 243

DUNCAN, DAVID B., Multiple Range and Multiple *F* Tests 1

FIELDS, PAUL E., *Abstract* #325 508

FINKNER, A. L. (*See* HORVITZ, D. G.)

FINNEY, D. J. and G. C. VARLEY, An example of the Truncated Poisson Distribution 387

FINNEY, D. J., *Abstract* #357 548

FISHER, R. A., *Abstract* #343 535

FLEISHER, J. (*See* HORVITZ, D. G.)

FLETCHER, G. H. (*See* BRANDT, A. E.)

FRAGA, C. G. (*See* CONAGIN, ARMANDO)

FREIRE, PAULO MELLO (*See* BRIER, O. G.)

FRICK, JAMES W., *Abstract* #334 514
GAUL, H. and H. MUENZNER, *Abstract* #311 244
GENGERELLI, J. A., *Abstract* #332 513
GOEN, R. L. (*See* TATE, R. F.)
GOMES, F. PIMENTEL, *Abstract* #348 540
GRANT, DAVID A., *Abstract* #330 511
GREENHOUSE, SAMUEL W., *Abstract* #304 240
GRIDGEMAN, N. T. (*See* HOPKINS, J. W.)
GRIDGEMAN, N. T., The Bradley-Terry Probability Model and Preference Tasting 335
HAMAKER, H. C., Experimental Design in Industry 257
HANSEN, M. H. and J. STEINBERG, *Abstract* #353 545
HARMAN, HARRY H., *Abstract* #333 513
HAYMAN, B. I. and K. MATHER, The Description of Genic Interaction in Continuous Variation 69
HOLT, L. B., An Attempt to Derive a Mathematical Characterization of the Antigenicity of Diphtheria Prophylactic 83
HOPKINS, J. W. and N. T. GRIDGEMAN, Comparative Sensitivity of Pair and Triad Flavor Intensity Difference Tests 63
HORVITZ, D. G., J. FLEISHER and A. L. FINKNER, *Abstract* #306 241
HUDDLESTON, HAROLD F., An Inverted Matrix Approach for Determining Crop-Weather Regression Equations 231
HUET, A., D. SCHWARTZ, and A. VESSEREAU, *Abstract* #302 114
HUNTER, J. S. (*See* YOUDEN, W. J.)
IPSEN, JOHANNES, *Abstract* #305 240
IPSEN, JOHANNES, Appropriate Scores in Bio-Assays Using Death-Times and Survivor Symptoms 465
IRWIN, J. O., *Abstract* #359 550
JESSEN, RAYMOND J., Determining the Fruit Count on a Tree by Randomized Branch Sampling 99
KEITER, F., *Abstract* #312 245
KENADLL, M. G., Further Contributions to the Theory of Paired Comparisons 43
KIMMEL, HERBERT D., *Abstract* #329 511
KNEIP, P., *Abstract* #313 246
KOLIER, S., *Abstract* #314 246
KRAMER, CLYDE YOUNG, On the Analysis of Variance of a Two-Way Classification with Unequal Sub-Class Numbers 441
LESLIE, R. T., *Abstract* #338 516
LIDER, L. A., *Abstract* #335 514
LINDER, ARTHUR, *Abstract* #363 555
LOWRY, DOROTHY C., Variance Components with Reference to Genetic Population Parameters 136
LUDWIG, W., *Abstract* #315 246
LUDWIG, W., *Abstract* #316 247
MANCEAU, J. N., *Abstract* #360 552
MATHER, K. (*See* HAYMAN, B. I.)
McINTYRE, G. A., Design and Analysis of Two Phase Experiments 324
MERRIFIELD, PHILIP R., *Abstract* #331 512
MOTT, G. O., *Abstract* #352 544
MUENZNER, H. (*See* Gaul, H.)
NORTON, H. W., A Further Note on Missing Data 110
OLLAGNIER, M., *Abstract* #303 114
OUTHWAITE, ANNE D. and A. RUTHERFORD, Covariance Analysis as an Alternative to Stratification in the Control of Gradients 431
PANSE, V. G. (*See* SUKHATME, P. V.)
PEARCE, S. C., *Abstract* #346 538
PYKE, RONALD (*See* CHAPMAN, D. J.)
REEVE, E. C. R., The Variance of the Genetic Correlation Coefficient 357
RICHARDSON, Mrs. G. L. and F. E. BINET, *Abstract* #342 518

ROBERTSON, ALAN, Prediction Equations in Quantitative Genetics 95
DA ROCHA, G. L., *Abstract* #351 542
RUBIN, HERMAN, *Abstract* #337 516
RUTHERFORD, A. (*See* OUTHWAITE, ANNE D.)
SAMPFORD, M. R., *Abstract* #322 249
SCHULTZ, E. F., Jr., Rules of Thumb for Determining Expectations of Mean Squares in Analysis of Variance 123
SCHWARTZ, D. (*See* HUET, A.)
SCHWARTZ, D. (*See* CHARBONNIER, A.)
SIQUEIRA, M. (*See* BRIER, O. G.)
SMITH, CEDRIC A. B., *Abstract* #324 250
SPICER, C. C., The Theory of Bacterial Constant Growth Apparatus 225
SPRENT, P., A Note on Design and Analysis of Soil Insecticide Experiments 427
STEEL, R. G. D., An Analysis of Perennial Crop Data 201
STEINBERG, J. (*See* HANSEN, M. H.)
STORMONT, C. N., *Abstract* #336 515
SUKHATME, P. V., and V. G. PANSE, *Abstract* #354 545
TATE, R. F. and R. L. GOEN, *Abstract* #328 511
TEISSIER, GEORGES, Sur la Determination de l'axe d'un Nuage Rectilligne de Points 344
THOMPSON, W. A., Jr., The Relative Size of the Inter- and Intra-Block Error in an Incomplete Block Design 406
TWEEDIE, M. C. K., *Abstract* #307 242
VARLEY, G. C. (*See* FINNEY, D. J.)
VESSEREAU, A. (*See* HUET, A.)
VESSEREAU, A. (*See* CHARBONNIER, A.)
WALTER, E., *Abstract* #317 247
WATSON, G. S., *Abstract* #308 242
WATSON, G. S., *Abstract* #340 517
WILLIAMS, E. J., *Abstract* #339 517
YATES, F., *Abstract* #321 249
YOUDEN, W. J. and J. S. HUNTER, Partially Replicated Latin Squares 399
YOUDEN, W. J., *Abstract* #350 541
YOULE, P. V. (*See* BOX, G. E. P.)

INDEX, BIOMETRICS VOLUME 11

Acceptance area, see tests
Additivity, see analysis of variance, hypothesis, model, transformations test of, 110, 111, 400
Agronomy, 201, 231, 241, 422, 431, and see horticulture, long-term experiments, soil
Aliases, 483, 494
Allometry, 344, and see growth
All-or-none response, see quantal response
Allowances, Tukey's, 29
Animal breeding, 95, and see inbreeding
Animal experiments, litter mates in, 249, and see design of experiments
Anthropology, 245, and see medicine
Association, see contingency
Bacteriology, 225, 375
Balancing, see paired comparisons, randomized blocks, selection
Bartlett's test, see homogeneity of variance, multivariate tests
Bayes' distribution, 17
Between-block error, see interblock error
Binomial distribution, 388, 492, and see distributions, quantal response negative, 250, 394
Bioassay, 83, 240, 465, 481, and see biometry, dose response curve, pharmacology, quantal response, time response curve, tolerance, toxicology, transformations
  design, 190
  interpretation of, 246
  slope ratio, 186
  species transferability, 88
Biochemistry, 192
Biological assay, see bioassay
Biomathematics, see biometry
Biometrics, see biometry
Biometric Society, 115, 252, 556
Biometry, 84, 183, 213, 225, 243, 245, 246, 247, and see allometry, bioassay, growth, hypotheses, models, path coefficients, Weber-Fechner law
Biophysics, see biometry
Blood groups, 250
Calculation, see computation
Canonical analysis, 289
Chain blocks, see linked blocks
Characteristic function, 242, and see moments
Chemistry, see biochemistry, industrial research
Chi square, 338, 377, 397, 411, and see analysis of variance, contingency, fourfold table, goodness of fit, minimum chi square estimate
  analysis of, 393
Choice, see selection
Chromosomes, 244
Clinical experiments, 469
Combination of data, 95, 240, 249
Combination of tests, see tests
Comparisons, see analysis of variance, degrees of freedom, orthogonal polynomials, tests
  individual, 16
  orthogonal, 179, 454
  paired, 43, and see half-leaf method
Complementary genes, 73
Components, see correlation, covariance, variance
Computation, 151, 231, 481, 495, and see estimation, graphics, iteration, matrices, method of moments, method of steepest descent, Newton's method, recurrence formulas
  punched card, 114
Confidence limits, 189, and see tests
  for correlation, 362
  for difference of means, 505
  for mean, 504
  for relative potency, 485
  for variance components, 146
Confounding, 134, 399, and see analysis of variance, design of experiments, factorial experiments
Contagious distribution, Neyman's, 149
  truncated, 153
Contingency tables, 249, and see chi square, correlation, fourfold table

missing data, 242
trend in, 375
Contrasts, see comparisons
Correlation, see contingency, covariance, regression
between relatives, see statistical genetics
biological, 247
biserial, 384
canonical, 206
matrix, 346
multiple, 206
partial, 248
phenotypic, 97
rank, 380
Courses in statistics, see statistics curricula and syllabi
Covariance, see correlation, matrices, regression, variance
adjustment, 428
analysis of, 246, 429, 431
components of, 247
matrix, 182, 188, 207, 345, 411, 484
multiple, 439
Crossing over, 244, and see linkage
Curve fitting, see estimation, orthogonal polynomials, regression
Decision, 7, and see tests
regions, 24
Degrees of freedom, 16, 296, 395, and see comparisons
effective, 144
Design of experiments, 248, 249, 257, 427, 494, and see aliases, components of variance, confounding, factorial experiments, fractional replication, half-leaf method, incomplete blocks, interblock error, intrablock error, lattices, linked blocks, long-term experiments, nonfactorial, organolepsis, paired comparisons, parallelogram design, perennials, precision, randomization, randomized blocks, replication, sampling, tree crops, triangle test, Youden square
for locating optimum, 287
genetic, 140
judging, 57
nonfactorial, 183
simplex, 174
two-phase, 324
Differential equations, 225, 321
Discriminant function, 209, 240, 242, and see multivariate analysis, scores
Disproportionate subclasses, 441, and see analysis of variance, fitting constants, method of weighted squares of means
Distribution, see Bayes, binomial, characteristic function, chi square, contagious, goodness of fit, logarithmic normal, moments, normal, Poisson
beta, 204
exact, 384
fitting, see estimation
infectious, see contagious
Neyman's, see contagious
of chi square, 411, 479
of F, 411
tolerance, 174
truncated, 465
Dominance, 137
Dose response curve, 83, 176, 188, 243, 465, and see time response curve
Duo-trio test, 63
Duplicate genes, 73
Ecology, 387, 504, and see entomology, fish, genetics, populations
Efficiency, 149, 325, 388, 438, 478, and see estimation, maximum likelihood, sufficient statistics
sampling, 108, 242
Election, see judging
Endocrinology, 174
Entomology, 156, 250, 387, 427, and see toxicology
Equiprobable ellipse, 345
Epistasis, 71, 137
dominant, 73
recessive, 73
Errata, 113, 251, 334
Error,
gross, 278
mean square, 276, and see variance
regression, see analysis of covariance
residuals, 261, 278, 428
term, proper, 135, 334
theory of, see analysis of variance, least squares, maximum likelihood, models, rejection of data
Estimation, 149, 456, and see combina-

tion of estimates, efficiency, fitting constants, information, least squares, maximum likelihood, method of moments, minimum chi square estimate, populations, scores, Sheppard's correction, sufficient statistics, theory of error
inefficient, 391
of components of covariance, 123, 136
of potency, 83, 188, 485
of proportion, 250
of variance, 390
simultaneous, 149
Expectation, mathematical, 410, and see mean, moments
of mean square, 123
Experimental design, see design of experiments
Experimental units, 238, and see selection
Factor analysis, 346, and see multivariate analysis
Factorial experiments, 15, and see fractional replication, nonfactorial
analysis of, 114, 134
confounded, 399
Faulty analysis, 428
Fiducial limits, see confidence limits
Field experiments, see agronomy, design of experiments, long-term experiments, soil
Fish, 504, and see ecology, population management
Fitting constants, 443, 454, and see disproportionate subclasses, least squares, missing values
Fitting distribution, see estimation
Fitting regression line, see covariance, least squares, regression
Fourfold table, 249, and see chi square, contingency
Frequencies, trends in, 395
F test, 444, and see analysis of variance, range test, tests
approximate, 144, 395
errors heterogeneous, 395
interpretation of, see tests
multiple, 1, 32, 505
power of, 398, 444
significant, procedure when, 1
variances unequal, 395
Generating function, see characteristic function, moments
Genetic correlation, 139, 247, 357
Genetic model, see models
Genetics, 69, 250, and see animal breeding, blood groups, chromosomes, complementary genes, crossing over, dominance, duplicate genes, epistasis, heritability, inbreeding, linkage, overdominance, path coefficients
assortative mating, 140, 363
human, 242, 247
non-additive effects, 139
prediction, 95
statistical, 69, 95, 136, 245, 357
Genetic selection, 139
Genetic variance, 95, 137
Goodness of fit, 296, 389, 487, 500, and see chi square
Graeco-Latin square, 327
Graphics, 277, 466, and see computation
Grouping, 237
Growth, 225, and see allometry, biometry, logistic curve
Half-leaf method, 327
Hematology, 246, and see blood groups, serology
Heredity, see genetics
Heritability, 95, 144, 360
variance of estimated, 146
Horticulture, 99, 125, and see agronomy, perennials
Hypothesis, see models, tests, null, 16, 338, 395, 415
Immunology, 469, and see serology, tuberculin
Inbreeding, 139
Incomplete blocks, 336, 406, and see lattices, randomized blocks, Youden square
balanced, 56
partially balanced, 61, 419
Incomplete experiments, see missing values
Industrial research, 257, 406, 402, and see physical sciences
Inference, 123, and see tests
Information, 333, 404, 436, 469, 494,

and see analysis of variance, design of experiments, estimation, maximum likelihood, precision
interblock, 325
matrix, 483, 495
mean, 240
Interaction, 127, 202, and see analysis of variance, models
as error term, 114, 134
assumed zero, 15, 403, 454
genetic, 71
Iteration, 151, 251, 284, 319, 346, 483, and see computation, least squares, maximum likelihood
Judging, 43, and see organolepsis
coefficient of agreement, 48
Latin square, 325, 399, 438
in time, 111
missing values, 110
partially replicated, 399
Lattices,
balanced, 325
rectangular, 427
Least significant difference, 2
test, 34
Least squares, 143, 345, 358, 454, and see adjusted means, analysis of variance, estimation, fitting constants, matrices, normal equations, theory of error
Likelihood, 66, and see maximum likelihood
Likelihood ratio, 240, 338
Limnology, see fish
Linear dependence, 483, and see matrices
Linkage, 70, 138, 358, and see crossing over
Linked blocks, 417
partially, 419
Logarithmic normal distribution, 84, and see normal distribution
Logistic curve, 228, 337, and see growth, logit transformation, populations
Long-term experiments, 201, and see tree crops
Main effect, see analysis of variance, interaction
Matching, see balancing, paired comparisons
Mathematical biology, see biometry
Matrices, 51, 143, 175, 411, 468, 481, and see covariance matrix, information matrix, linear dependence, multivariate analysis
design, 176, 481
direct product of, 179
inverse, 182, 188, 231, 435, 495
tables of, 195
of coordinate functions, 483
powers of, 51
Maximum likelihood, 66, 242, 249, 251, 337, 390, 482, 496, and see efficiency, estimation, information, theory of error
iterative computation, 149, and see iteration
Mean, see moments
adjusted, 401, 427, 435, and see least squares
geometric, 84
weighted, 114, 325, 368
Medicine, 83, 375, and see clinical, genetics, hematology, immunology, pharmacology, physiology, Schick conversion rate, serology, toxicology, virology
Metameter, 465, and see scales
Metric, 312, and see scales
Minimum chi square estimate, 388
Missing values, 110, 249, and see fitting constants, mixed-up values, rejection of data
contingency tables, 242
impossible, 110
variance of, 110
Mixed-up values, 242, and see missing values
Models, see biometry, components of variance, hypothesis, regression, theory of error, transformations
mathematical, 86, 110, 174, 266, 407, 445
mixed, 123, 136, 407
multivariate, 202
probability, 335
statistical, 143, 390
Moments, 360
generating function, 360
method of, 149
Multivariate analysis, 201, 344, and see analysis of variance, discriminant

function, factor analysis, matrices
Newman-Keuls test, see multiple range test
Newton's method, 149
Nonfactorial experiments, 183
Normal distribution, see logarithmic normal distribution, normality
multivariate, 344
Normal equations, 231, 443, and see least squares, matrices
Normality, 278, and see normal distribution
departure from, 336
Organolepsis, 335, 406, and see judging, scores, triangle test
flavor, 63, 335
homogeneity of data, 65
Orthogonal functions, 411
Orthogonality, 190, 439, 484, and see comparisons
non-orthogonality, 441
Orthogonal polynomials, 271, 431
Overdominance, 141
Pairing, see balancing, paired comparisons
Palatability, see organolepsis
Parallelogram design, 483
Path coefficients, 98, 372
Percentages, see proportions
Perennials, 201, and see tree crops
Pharmacology, 243, and see toxicology
Physical science, 238, 290, and see industrial research
Physiology, 86, and see endocrinology, medicine, threshold
Poisson distribution, 151, 248, 495
moment ratio tables, 157
truncated, 387
Pooling, 249, 362, 410, 472
Populations, see distributions, fish, statistical genetics
management, 225, and see ecology
Precision, 429, and see information
Prediction, see regression
genetic, 95
Preferences, see organolepsis
Proportions, 250, and see binomial
trend in, 375
Protection level, 13
consistent, 14
Quantal response, 481, and see bioassay, models
Quantification, see scales
Randomization, 241, 325, 493, and see selection
Randomized blocks, 14, 110, 111, 431, and see balancing, incomplete blocks, interblock error
Range,
shortest significant, 5
significant studentized, 5
table of, 3
test, multiple, 1, 26, 212
interpretation of, 6
power of, 2
Tukey's, 31
Ranks, 43, 335, 407, and see scores, transformations
of means, 7
tied, 47
Recurrence formulas, 150
Regression, see adjusted means, canonical analysis, correlation, covariance, orthogonal polynomials, trend
adjustment, 428
analysis, 180, 264, 376, 482, and see analysis of covariance
coefficient, 85, 270, 435, 484
biased, 483
crop-weather, 231
equation, 231
homogeneity of, 246
independent variable affected by treatments, 430
interpretation of, 379
line, 344
multiple, 188, 231, 344
weighted, 368
Rejection of data, 278, and see gross errors, missing values, selection
Replication, 269, 324, 439
fractional, 15, 399, and see aliases
Residuals, see errors
Response surface, 183, 287
Result-guided procedures, 239
Sample size needed, 36
Sampling, 125, and see components of variance, design of experiments
efficiency, 108
error, see variance

nonrandom, 241
random, 99, 241
stratified, 108, 431
Scales, 76, and see metric, scores
Scheffé's test, 35
Schick conversion rate, 85
Scores, 240, 335, 376, 465, and see discriminant functions, organolepsis, ranks, scales
iterated, 50
tournament, 49
Selection, see balancing, design of experiments, genetic selection, randomization, rejection of data, sampling
of characters, 243
of experimental units, 89, 238
of method of statistical analysis, 239
of scores, 378
of significance level, 14, 277
Sensory tests, see organolepsis
Serology, 83, 114, and see blood groups, hematology, immunology
Sheppard's correction, 237
Significance, 11, and see selection
regions, 24
Simultaneous equations, see matrices
Sociology, 250
Soil science, 427
Squariance, 338, and see variance
Standard deviation, see variance
Standard error, see variance
Statistical control, see analysis of covariance
of gradient, 431
Statistics curricula and syllabi, 213, 254
Steepest descent, method of, 288, 318
Stochastic process, 247
Structural analysis, 126
Student's t, see t test
Subjective evaluation, see judging, organolepsis
Successive approximation, see iteration
Sufficient statistics, 149, and see efficiency, estimation
Survival curve, see time response curve
Survival time, see time response curve
Tables, miscellaneous, 37, 38, 72, 159, 177, 195
Taste tests, see organolepsis
Teaching of statistics, 118, 213, and see statistics curricula and syllabi
Tests, see analysis of variance, chi square, confidence limits, F test, goodness of fit, least significant difference, likelihood ratio, multiple range test, null hypothesis, protection level, ranks, rejection of data, result-guided, Scheffé's, significance, triangle test, t test
choice of, 383, 435
combination of, 201, 249
efficiency, 249
independent, 15
interpretation of, 6, 211, 343
multiple, 1
multiple comparisons, 33
multivariate, 204
normal deviate, multiple, 14
normality, 278
of significance,
Type I error, 11
Type II error, 14
of significance of
correlation, 362
extreme deviate, 40
interaction, 278
largest difference, see multiple range test
regression, 375
optimum, 17
power of, 9, 64
range, 1
rank correlation, 380
results suggested by data, see result-guided
Theory, see biometry, hypothesis, model
Threshold, 335, 481
Time response curve, 249, 465, and see dose response curve
Tolerance, 174
Tournaments, scoring, 49
Toxicology, 174, 243, and see bioassay, pharmacology
Transformations, 249, 465, 481, and see additivity, analysis of variance, bioassay, canonical analysis, logistic curve, matrices, models
angular, 483, 498
linear, 175, 207
logarithmic, 248

log dose, table of, 177
logit, 337, 481
normit, 337
orthogonal, 175
probit, 84, 174, 337, 481
squared hyperbolic secant, 337
square root, 327, 495
Tree crops, 99, 125, and see long-term experiments
Trend, 375, and see regression
Triangle test, 63
T test, see confidence limits
grouped data, 237
multiple, 24
power of, 248
symmetric three-decision, 19
Tuberculin, 114
Unequal subclasses, 441
Uniformity data, 430
Variance, see covariance, *F* test, genetics, mean square error, Sheppard's correction, squariance
analysis of, 123, 178, 190, 201, 259, 400, 427, 441, 499, and see additivity, chi square, combination of data, components of variance, degrees of freedom, disproportionate subclasses, error, fitting constants, *F* test, interblock error, least significant difference, least squares, long-term experiments, missing values, models, multiple *F* test, multivariate analysis, orthogonal polynomials, pooling, regression, structural analysis, tests, transformations, uniformity data
computation of, 111, 114, 179
fixed effects, 123
interpretation of, 139, 259, 276, 290, 410, 428
mixed model, 123, 136
of triangular array, 453
random effects, 123, 136
approximate, 198, 359
asymptotic, 391
components, 123, 136, 204, 237, 329, 416, and see components of covariance
computation of, 143
confidence limits for, 144
variance of, 144
expectation, 123, 141
homogeneity of, 232, 340, 395
interblock, 406
intrablock, 406
matrix, see covariance matrix
negative, 441
of adjusted mean, 436
of difference of adjusted means, 402
of estimate, 251
of estimate of heritability, 146
of genetic correlation, 357
of regression coefficient, 231, 367, 378, 435, 484
phenotypic, 137, 360
ratio, confidence limits for, 146, 407
sampling, 105
theoretical, 123
Variate, canonical, 206
Virology, 248, 326, and see half-leaf method
Weber-Fechner law, 335
Weighted squares of means, method of, 443
Weighting, 102, 142, 396, 444, 489, 499
Youden squares, 57
Zoology, 352
Z test, see *F* test